

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1-7. (Cancelled)

8. (Currently Amended) The method of claim 1, A method of loading data into a new table copy, the new table copy to be added to a database replication group including a plurality of pre-existing table copies, the method comprising:

loading data from a source table copy into the new table copy, the source table copy being one of the plurality of pre-existing table copies in the database replication group;
concurrent to the loading of the data into the new table copy,

simultaneously applying changes of a user application received during the loading of the data to the plurality of pre-existing table copies in the database replication group including the source table copy; and

creating a spill storage area at the new table copy and storing the changes of the user application in the storage spill area without applying the changes of the user application to the new table copy; and
upon completion of the loading of the data into the new table copy, applying the changes stored in the spill storage area to the new table copy, wherein applying the changes of the user application stored in the spill storage area to the new table copy comprises,

receiving the a load done message at the new table copy;
starting a spill agent thread at the new table copy;
changing the a state of the subscription of the new table copy at the new table copy to “load finishing”; and

the spill tread agent processing the changes of the user application stored in the spill storage area.

9. (Original) The method of claim 8, wherein for an internal data load, a thread used to load the data is reused as the spill agent thread.

10. (Previously Presented) The method of claim 8, wherein the spill tread agent processing the changes of the user application stored in the spill storage area comprises:

re-executing the changes of the user application to a same row at the new table copy in a same order as previously executed at the source table copy;

identifying and resolving dependencies between the changes of the user application to the same row; and

detecting and resolving conflicts between the changes of the user application to the same row.

11. (Previously Presented) The method of claim 10, wherein re-executing the changes of the user application to a same row at the new table copy comprises:

deleting each re-executed change from the spill storage area in a same transaction as the re-execution the change.

12. (Previously Presented) The method of claim 11, wherein the deletion of each re-executed change is performed with a two-phase commit protocol.

13. (Previously Presented) The method of claim 11, wherein deleting each re-executed

change comprises:

storing a message identifier for the re-executed change at the new table copy, wherein upon a restart of the loading of the data into the new table copy in response to a shutdown or crash, only changes from the spill storage area without a corresponding stored message identifier are applied to the new table copy.

14. (Previously Presented) The method of claim 10, wherein detecting and resolving conflicts comprises:

ignoring a change to a row not found in the new table copy when re-executing a conflicting row delete;

ignoring a change to a row not found in the new table copy when re-executing a conflicting row update;

ignoring a change to a row in the new table copy when re-executing a conflicting row insert; and

ignoring a change to an old row not found or a new row found in the new table copy when re-executing a conflicting key update.

15. (Previously Presented) The method of claim 10, wherein detecting and resolving conflicts comprises:

ignoring a missing row in the new table copy when re-executing a row delete;

transforming a re-execution of an update into a row insert when a row in the new table copy is missing; and

transforming a re-execution of an insert into an update when a row in the new table copy already exists.

16-24. (Cancelled)

25. (Currently Amended) The computer readable medium of claim 18; A computer readable medium with program instructions, tangibly stored thereon, for loading data into a new table copy, the new table copy to be added to a database replication group including a plurality of pre-existing table copies, the computer readable medium comprising instructions for:
loading data from a source table copy into the new table copy, the source table copy being one of the plurality of pre-existing table copies in the database replication group;
concurrent to the loading of the data into the new table copy,
simultaneously applying changes of a user application received during the loading of the data to the plurality of pre-existing table copies in the database replication group including the source table copy; and
creating a spill storage area at the new table copy and storing the changes of the user application in the storage spill area without applying the changes of the user application to the new table copy; and
upon completion of the loading of the data into the new table copy, applying the changes stored in the spill storage area to the new table copy, wherein the instructions for applying the changes of the user application stored in the spill storage area to the new table copy comprises instructions for,
receiving the a load done message at the new table copy;
starting a spill agent thread at the new table copy;
changing the a state of the subscription of the new table copy at the new table copy to “load finishing”; and

the spill tread agent processing the changes of the user application stored in the spill storage area.

26. (Previously Presented) The computer readable medium of claim 25, wherein for an internal data load, a thread used to load the data is reused as the spill agent thread.

27. (Previously Presented) The computer readable medium of claim 25, wherein the instructions for the spill tread agent processing the changes of the user application stored in the spill storage area comprises instructions for:

re-executing the changes of the user application to a same row at the new table copy in a same order as previously executed at the source table copy;

identifying and resolving dependencies between the changes of the user application to the same row; and

detecting and resolving conflicts between the changes of the user application to the same row.

28. (Currently Amended) The computer readable medium of claim 27, wherein the instructions for re-executing the changes of the user application to a same row at the new table copy comprises instructions for:

(e4iA) deleting the re-executed change from the spill storage area in a same transaction as the re-execution.

29. (Currently Amended) The computer readable medium of claim 28, wherein the instructions for deleting each re-executed change comprises instructions for:

performing the deletion of each re-executed change using a two-phase commit protocol.

30. (Currently Amended) The computer readable medium of claim 28, wherein the instructions for deleting each re-executed change comprises instructions for:

storing a message identifier for the re-executed change at the new table copy, wherein upon a restart of the loading of the data into the new table copy in response to a shutdown or crash, only changes from the spill storage area without a corresponding stored message identifier are applied to the new table copy.

31. (Previously Presented) The computer readable medium of claim 27, wherein the instructions for detecting and resolving conflicts comprises instructions for:

ignoring a change to a row not found in the new table copy when re-executing a conflicting row delete;

ignoring a change to a row not found in the new table copy when re-executing a conflicting row update;

ignoring a change to a row in the new table copy when re-executing a conflicting row insert; and

ignoring a change to an old row not found or a new row found in the new table copy when re-executing a conflicting key update.

32. (Previously Presented) The computer readable medium of claim 27, wherein the instructions for detecting and resolving conflicts comprises instructions for:

ignoring a missing row in the new table copy when re-executing a row delete;

transforming a re-execution of an update into a row insert when a row in the new table

copy is missing; and

transforming a re-execution of an insert into an update when a row in the new table copy already exists.

33-34. (Cancelled)

35. (Previously Presented) A system comprising:

an asynchronous database replication group including a plurality of pre-existing table copies;

a new table copy to be added to the asynchronous database replication group;

a load utility to load data from a source table copy into the new table copy, the source table copy being one of the plurality of pre-existing table copies in the asynchronous database replication group;

concurrent to the load utility loading the data from the source table copy into the new table copy, an apply module to

simultaneously apply changes of a user application received during the loading of the data to the plurality of pre-existing table copies in the replication group including the source table copy; and

create a spill storage area at the new table copy and store the changes of the user application in the storage spill area without applying the changes of the user application to the new table copy; and

upon completion of the loading of the data into the new table copy, the apply module to apply the changes of the user application stored in the spill storage area to the new table copy; and

remove the spill storage area from the new table copy after the changes stored in
the spill storage area have been applied to the new table copy.

36-37. (Cancelled)